KALITKA, E.

"Installation of Portable Telephones for Railroad Telecommunication Networks Installation of the EK Type of Portable Telephone." P. 130. (WIADOMOSCI TELEKOMUNIKACYJNE, Vol. 23, No. 6, June, 1954, Warszawa, Poland)

SO: Monthly List of East European Accessions. (EEAL), LC, Vol. 4, No. 1, Jan. 1955 Uncl.

KALITKA, E.

KALITKA, E.

Contactless telegraph relay.

p. 53 (Przeglad Kolejowy Elektrotechniczny. Vol. 8, no. 2, Feb. 1956. Warszawa, Poland)

Monthly Index of East European Accessions (EEAI) LC. Vol. 7, no. 2, February 1958

KALITKA, E.

Stroboscopic meter for determining deformations of telegraphic signals.

p. 151 (Przeglad Kolejowy Elektrotechniczny. Vol. 8, no. 5, May 1956. Warszawa, Poland)

Monthly Index of East European Accessions (EEAI) LC. Vol. 7, no. 2,
February 1958

KALITKA, E.

KALITKA, E. New models of the Teletype. p. 374.

Vol. 8, no. 12, Dec. 1956
PRZEDGLAD KOLEJOWY ELEKTROTECHNICZNY
PHILOSOPHY & RELIGION
Warszawa, Poland

SO: East European Accession, Vol. 6, No. 3, March 1957

KALITKA, E.

Megaphonic installations.

P. 54. (PRZEGLAD KOLEJOWY ELEKTROTECHNICZNY) (Warszawa, Poland) Vol. 9, no. 2, Feb. 1957

SO: Monthly Index of East European Accession (EEAI) LC Vol. 7, No. 5, 1958

KALITKA, Edmund, inz.; BIALECKI, Marian, inz.

Transmission of radio time signals. Przegl kolej electortechn 13 no.10:296-299 '61.

KALITKA, Edmund, inz.; BIALECKI, Marian, inz.

Transmission of radio time signals through "Western Electric" selectors. Przegl kolej elektrotech 14 no.2:47-50 F '62.

KALITKA, Edmund, inz.

Railroad telecommunication during the winter period 1962/63. Przegl kolej elektrotech 15 no.5:125-127 My '63.

L 18218-65 EWT(d)/EWT(l)/EWP(c)/EWP(v)/T/EWP(k)/EWP(l) Pf-4/Pl-4 ASD(p)-3
MLK

ACCESSION N : AT5001225 S/0000/61/000/000/0150/0160

AUTHOR: Krygov, B. S.; Kaitkin, B. V.

TITLE: Ultrasonic immersion installation for the production of visible images of defects in sheets and thin-wall articles

material/EMS-1

ABSTRACT: The purpose of the research was to obtain visible defect images with maximum resolution by a method suitable for eventual automatization. The image is produced by means of a long-persistence cathode ray tube, and high resolution is attained by using a multiple-feeler converter of special construction, which produces narrow closely-spaced ultrasound beams. Defects with minimum dimension of 1 mm can be displayed without distortion. A block diagram of the apparatus (EMS-1) is shown on page [illegible] of the Enclosure. The equipment was [illegible]

Card 1/[illegible]

L 18218-65
ACCESSION NR: AT5001225

artificial defects in sheets of duraluminum 6 mm thick. The results show that the equipment can disclose defects such as cracks, flaking, and various inhomogeneities (inclusion, coarse grains). Orig. art. has: 12 figures.

ASSOCIATION: None

SUBMITTED: 11May61 ENCL: 01

SUB CODE: GP, IE NR REF SOV: 003 OTHER: 000

Card 2/2

S/260/62/000/007/002/004
I006/1206

AUTHOR: Krygov, B. S. and Kalitkin, B. V.

TITLE: Ultrasonic immersion installation for revealing defects in sheets and thin-walled articles

PERIODICAL: Referativnyy zhurnal, otdel'nyy vypusk Pribory tochnoy mekhaniki i ispytatel'nyye ustanovki, v. 7, 1962, 20, abstract 40.7.113. In collection "Prom. primeneniye ultrazvuka. Kuybyshevsk. aviats. in-t". Kuybyshev, 1961, 150-160

TEXT: The ultrasonic installation of type ЭМС-1 (EMS-1) for visualizing defects in sheets and thin-walled articles of small dimensions is described. In it the defect image appears on the screen of a cathode-ray tube with long afterglow. Owing to the use of a many-tentacled radiating transformer, giving narrow and closely spaced ultrasonic pencils, visual images of defects are obtained with minimum dimension up to 1 mm (0.01 cm^2 in surface), and the actual defect dimension can be determined. The installation is suitable for detection of cracks, dislocations, and any regions of non-uniformity in the industrial control of large articles for responsible utilization. The block-diagram of the installation is given. There are 12 figures

[Abstracter's note: Complete translation.]

Card 1/1

ZOLOTAREV, I. (Lugansk); TKACHUK, I. (Sungait); KALITKIN, I. (Sungait)

Again about the quality of fire engines. Pozh.delo 4 no.12:21 D '58. (MIRA 11:12)

1. Zamestitel' nachal'nika pozharnoy chasti (for Zolotarev). (Fire engines)

KALITKIN, K.N., podpolkovnik meditsinskoy sluzhby

Method for registrating pain following appendectomy. Voen.med. zhur. no.12:75-76 D '56. (MLRA 10:3)
(APPENDIX (ANATOMY)--SURGERY) (PAIN)

KALITKIN, K.N., podpolkovnik meditsinskoy sluzhby

Hypnosis with a type recorder before and after surgery. Voen.-med. zhur. no.7:86 Jl '57. (MIRA 11:1)
(HYPNOTISM--THERAPEUTIC USE)
(OPERATIONS, SURGICAL)

KALITKIN, K.N. (Tashkent).

Ependymoma of the central canal of the medulla oblongata.
Vopr.neirokhir. 22 no.4:56 Jl-Ag '58 (MIRA 11:9)
(MEDULLA OBLONGATA, neoplasms,
ependymoma of cnetral canal (Rus))
(EPENDYMOMA, case reports,
medulla oblongata, central canal (Rus))

KALITKIN, K.N. (Tashkent)

Successful removal of a migrating foreign body from the brain.
Vop.neirokhir. 23 no.3:53-54 My-Je '59. (MIRA 12:8)
(BRAIN, for. bodies,
surg. (Rus))

KAL'TKIN, K.N.

Treatment of tracheostomy of patients severely ill with a disorder of the gaseous metabolism. Med. zhur. Uzb. no.11:64-65 N '61. (MIRA 15:2)

(TRACHEA—SURGERY) (RESPIRATION)

KALITKIN, K.N. (Tashkent)

Tracheostomy in wounds and diseases of the brain and spinal cord. Vop. neirokhir. 26 no.5:54-55 S-O'62

KALITKIN, K.N.

Stationary installation for oxygen therapy. Med.zhur.Uzb.
no.12:91 D '58. (MIRA 13:7)
(OXYGEN--THERAPEUTIC USE)
(SURGICAL INSTRUMENTS AND APPARATUS)

KALITKIN, Nikolay Mikhaylovich; BARKOVSKIY, I.V., redaktor; MAKRUSHIN, V.A., tekhnicheskiy redaktor

[Methods of teaching computation by abacus in class 5] Metodika obucheniia vychisleniiu na schetakh v 5 klasse. Leningrad, Gos. uchebno-pedagog. izd-vo Ministerstva prosveshcheniia RSFSR, Leningradskoe otd-nie, 1956. 80 p. (MLRA 9:12)
(Abacus)

BALASHOV, V. V., DOROFEYEV, O. F., KALITKIN, N. N., KAMINSKIY, A. K., SHIROKOV, Yu. M., SMIRNOV, Yu. F. and TURAYEV, K. A.

"Method of the Light Nuclei Levels Calculation,"

paper submitted at the All-Union Conf. on Nuclear Reactions in Medium and Low Energy Physics, Moscow, 19-27 Nov 57

Moscow State Univ. and Lebedev Physics Inst. Acad. Sci. USSR

L 16114-66 EWT(d) LJP(c)

ACC NR: AP5025119 SOURCE CODE: UR/0208/65/005/005/0938/0944

AUTHOR: Gol'din, V. Ya. (Moscow); Kalitkin, N. N. (Moscow); Shishova, T. V. (Moscow)

ORG: none

16,44,55

TITLE: Nonlinear difference schemes for hyperbolic equations

SOURCE: Zhurnal vychislitel'noy matematiki i matematicheskoy fiziki, v. 5, no. 5, 1965, 938-944

TOPIC TAGS: hyperbolic equation, computer technology

ABSTRACT: In solving multidimensional problems, the limitation of the memory speed of even and most advanced computers allowed only the use of rough networks. The degree of accuracy of first-order schemes was thus insufficient and it was desirable to consider schemes of a higher degree of accuracy. However, with rough networks even these schemes did not yield the qualitative aspect of the solution. A method for constructing nonlinear (even for linear problems) schemes was suggested which preserved the qualitative behavior of the schemes of the first order which, however, had a higher degree of accuracy. The authors thank A. N. Tikhonov and A. A. Samarskiy for consultation and G. V. Danilov.

Card 1/2 UDC: 518:517.944/.947

L 16114-66

ACC NR: AP5025119

B. M. Marchenko for assistance. Orig. art. has: 15 formulas, 5 figures and 4 tables.

SUB CODE: 09,12/ SUBM DATE: 25Jan65/ ORIG REF: 005/ OTH REF: 001

mat

Card 2/2

83592

S/056/60/038/005/025/050
B006/B070

24.5300

AUTHOR: Kalitkin, N. N.

TITLE: Thomas-Fermi Atomic Model With Quantum and Exchange Corrections

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 5, pp. 1534 - 1540

TEXT: The behavior of matter under high pressure and temperature is described, inter alia, by the statistical atomic model due to Thomas and Fermi, which represents a quasi-classical approximation to the method of the self-consistent field. This approximation is improved by taking exchange effects into consideration (Thomas-Fermi-Dirac model). In this model, this consideration is made only in a quasi-classical form. The more accurate form in which the quantum effects are taken into account by means of the Weizsäcker equation leads to methodological difficulties. The Thomas-Fermi model has repeatedly been calculated with quantum and exchange corrections. The author of the present paper calculates the corrections to the potential, the energy, and the chemical potential of

Card 1/3

Thomas-Fermi Atomic Model With Quantum and Exchange Corrections

S/056/60/038/005/025/050
B006/B070

the atom within the framework of this model, and gives numerical calculations of the thermodynamic functions for a compressed atom at absolute zero. First, the general relations for an arbitrary temperature are obtained, and then the transition $T \to 0$ is made for $\mu > 0$ (μ - chemical potential). The equations (12) so obtained are numerically integrated with a computer of the type "Стрела" ("Strela"). The calculations are carried out up to a compression of the nucleus, at which the asymptotic relation (15), obtained by a series expansion of (12), is valid up to $10^{-3} - 10^{-4}$. The thermodynamic quantities so obtained are tabulated. The results obtained theoretically are compared with the experimental data of L. V. Al'tshuler and others. Figs. 1 and 2 diagrammatically show a comparison of the theoretical and experimental curves for pressure and energy. The Thomas-Fermi model with corrections offers the best representation of the experimental curves. Fig. 3 shows the theoretical and experimental densities of uncompressed matter as functions of the nuclear charge. A. A. Samarskiy and V. Ya. Gol'din are thanked for suggesting the topic and for their interest, D. A. Kirzhnits for discussions and I. A. Govorukhina for carrying out numerical calculations.

Card 2/3

83592

Thomas-Fermi Atomic Model With Quantum and Exchange Corrections

S/056/60/038/005/025/050
B006/B070

Ya. B. Zel'dovich, A. S. Kompaneyets, and Ye. S. Pavlovskiy are mentioned. There are 3 figures, 1 table, and 9 references: 4 Soviet, 4 US, and 1 Hungarian.

SUBMITTED: December 3, 1959

Card 3/3

KALITKIN, N.N.; GOVORUKHINA, I.A.

Interpolation formulae for cold compression of substances. Fiz. tver. tela 7 no.2:355-362 F '65. (MIRA 18:8)

1. Matematicheskiy institut imeni Steklova AN SSSR, Moskva.

N. N. KALITKIN, L. V. KUZMINA, G. T. ZATSEPIN

Calculation of muon penetration through substances taking into account fluctuation losses

report submitted for the 8tn Intl. Conf. on Cosmic Rays (IUPAP), Jaipur, India, 2-14 Dec 1963

KALITKIN, N.M. (Leningrad)

Finding the numerical values of irrational expressions. Mat. v shkole no.3:62-66 My-Je '62. (MIRA 15:7)
(Mathematics--Study and teaching)

ACC NR: AP6027445 (A) SOURCE CODE: UR/0259/66/000/007/0020/0021

AUTHOR: Kondrat'yev, L.; Kalitkin, T.; Bcytsov, A.

ORG: Scientific Research Institute of Civil Aviation (Nauchno issledovatel'skiy institut grazhdanskoy aviatsii)

TITLE: New application for aircraft engines

SOURCE: Nauka i tekhnika, no. 7, 1966, 20-21

TOPIC TAGS: turboprop engine, airfield clearing, airfield maintenance equipment, agricultural machinery, AIRCRAFT ENGINE / AI-20 TURBOPROP ENGINE

ABSTRACT: The Riga Gas-Turbine Engine Laboratory, headed by Candidate of Technical Sciences A. Dobrokhotov, has developed new applications for used AI-20 turboprop aircraft engines. These engines, which produce high temperatures and high-velocity airstreams, are utilized in different branches of the national economy. The AI-20 engines are used in agriculture to dry grain, corn, cotton, wool, and other agricultural products. At airports they are used to clean snow, ice, and rubbish from flight lines, platforms, and taxiways and to deice aircraft. The AI-20 engines are placed on special racks on D-452 tractors or APK-6 airport trucks. They are used as power plants for driving mobile electric power stations and as compressor units in the oil- and gas-mining industries. Operating on kerosene or diesel fuel, the electric power stations produce 600 to 800 kw of electricity. Orig. art. has: 3 figures

SUB CODE: 21, 01/ SUBM DATE: none [WA]

Card 1/1

KALITOVA, V

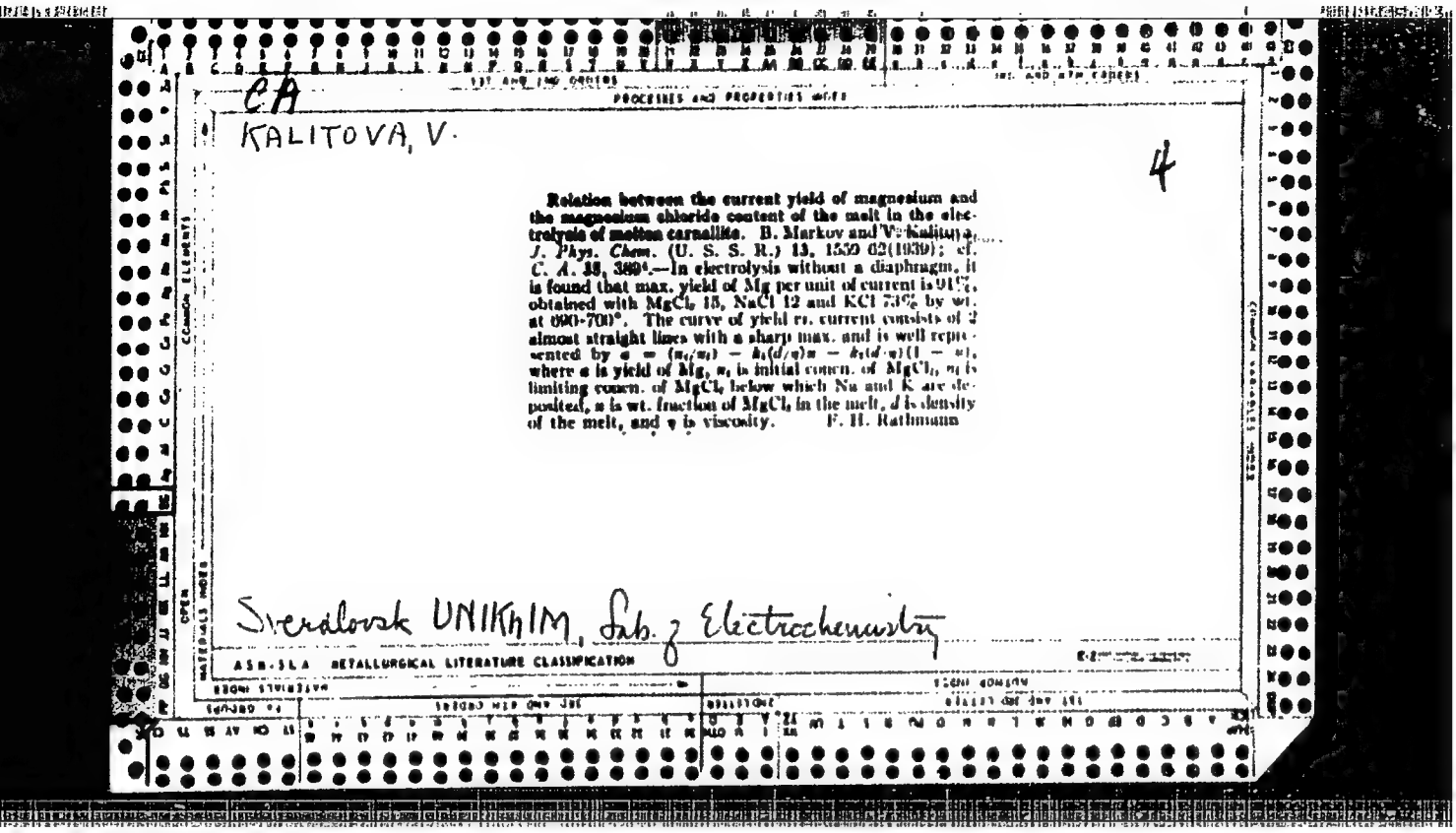
KALITOVA4V8 600

1. MARKOV, B.: SHCHERBAKOV, I.; KALITOVA, V.

2. USSR (600)

Cathode Polarization during the Precipitation of Manganese from Molten Carnallite," Zhur. Fiz. Khim, 13, No. 10, 1939, Sverdlovsk, UNIKhIM, Laboratory of Electrochemistry. Received 1 June 1939.

9. [redacted] Report U-1615, 3 Jan. 1952.



CA

KALITOVA, V.

4

Relation between the current yield of magnesium and the magnesium chloride content of the melt in the electrolysis of molten carnallite. B. Markov and V. Kalitova. *J. Phys. Chem.* (U. S. S. R.) **13**, 1559-62(1939); cf. *C. A.* **33**, 3494.—In electrolysis without a diaphragm, it is found that max. yield of Mg per unit of current is 91%, obtained with $MgCl_2$ 15, NaCl 12 and KCl 73% by wt. at 690-700°. The curve of yield vs. current consists of 2 almost straight lines with a sharp max. and is well represented by $a = (n_0/n) - k_1(d/\eta)n - k_2(d/\eta)(1 - n)$, where a is yield of Mg, n is initial concn. of $MgCl_2$, n_0 is limiting concn. of $MgCl_2$ below which Na and K are deposited, n is wt. fraction of $MgCl_2$ in the melt, d is density of the melt, and η is viscosity. F. H. Rathmann

Sverdlovsk UNIKhIM, Lab. of Electrochemistry

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

MARKOV, B.: [illegible]DAKOV, I., KALITOVA, V.

Sverdlovsk

Electrochemical Laboratory, Ural Scientific Research Chemical Institute, Sverdlovsk, (-1939-)

"The Problem of Electrolysis of Molten Carnellite", Dependence of the Yield Relative to the Current Imposed on the Magnesium of the Content of Magesium Chloride in the Melt."

Zhur. Fiz. Khim., Vol. 14, No. 2, 1940.

137-58-4-7877

Translation from: Referativnyy zhurnal, Metallurgiya. 1958, Nr 4. p 216 (USSR)

AUTHORS: Gurevich, I. Ye., Kalitova, V. I.

TITLE: Electroplating Thick Coatings of Platinum (Gal'vanicheskoye platinirovaniye s polucheniyem tolstykh osadkov)

PERIODICAL: Tr. Ural'skogo politekhn. in-ta, 1957, Nr 69, pp 87-100

ABSTRACT: Thick coatings of Pt (100-200 microns) may be deposited from phosphate electrolytes under 3 sets of conditions: (1) A bath of the following composition (g/liter) Na_2PtCl_6 24. Na_2HPO_4 120, and $(NH_4)_2HPO_4$ 20 at 20°C and D_k 0.2 amps/dm^2. Electrolysis is interrupted for 1-2 min after every 20 min. Bright coatings up to 20 microns thick are produced. (2) Bath composition as follows (in g/liter): $(NH_4)_2PtCl_6$ 24, Na_2HPO_4 120 at 20° and D_k 0.3-0.4 amps/dm^2. A spongy precipitate forms atop the constantly growing Pt precipitate on the cathode; this precipitate must be removed after 8 to 10 hours of the electrolysis. A coating of 100-200 microns thickness, or more, may be produced. (3) Same bath as in (2). The process is run with continuous electrolysis, stirring by air and constant circulation with saturation of of the circulating electrolyte and a D_k of 0.4-0.5 amps/dm^2 at

Card 1/2

137-58-4-7877

Electroplating Thick Coatings of Platinum

60°. This method makes it possible to obtain Pt deposits 100-200 microns and more in thickness. Development of this method of producing heavy Pt coatings makes it possible to conserve expensive and scarce Pt by making parts of various other metals and then platinum-plating them.

Ye. L.

1. Platinum plating

Card 2/2

GUREVICH, I.Ye.; KALITOVA, V.I.; PETROPAVLOVSKIY, V.G.

Role played by the bivalent ions of chromium during its cathodic deposition from sulfate solutions. Zhur.prikl.khim. 34 no.10: 2245-2248 O '61. (MIRA 14:11)

1. Kafedra elektrokhimii Ural'skogo politekhnicheskogo instituta imeni Kirova.

(Chromium--Plating)

KALITOVSKI, E.F.

[Medicinal plants of White Russia] Pryrodnyia liachzbnyia resursy belorusi, Minsk, Dziarzh. vyd-va BSSR, 1953. 25 p. (MLRA 10:2)
(WHITE RUSSIA--BOTANY, MEDICAL)

KALITOVSKIY, E. F.

KALITOVSKIY, E. F. — "Natural Factors and Medical Localities of Belorussian SSR as a Basis for the Development of Health Resorts in the Republic." (Experimental Clinical Res), Minsk State Medical Inst., Minsk, 1956. (Dissertations for the Degree of Doctor of Medical Sciences.)

KNIZHNAYA LETOPIS
No. 41, October 1956

KALITOVSKIY, Yo.F. (Minsk)

Bobruysk mineral water and its use in therapy. Vop.kur.fizioter. i lech.fiz.kul't. 23 no.4:368-370 Jl-Ag '58 (MIRA 11:8)
(BOBRUYSK--MINERAL WATERS)

KALITOVSKIY, Ye. F.

"Belorussian sapropel muds and their use in medicine."

Report submitted for the 2nd International Peat Congress, Leningrad, 15-22 Aug 63.

KALITOVSKIY, Ye.F., kand. med. nauk; KENTS, V.V., kand. med. nauk; KRASNIKOVA, Ye.Ya.; LYUBISHCHEV, S.A.

Causes and prevention of morbidity of the peripheral nervous system in industrial plants. Zdrav. Bel. 9 no.8:54-56 Ag '63 (MIRA 17:3)

1. Belorusskiy nauchno-issledovatel'skiy institut nevrologii, neyrokhirurgii i fizioterapii (direktor I.P. Antonov, nauchnyy rukovoditel' - akademik AN BSSR D.A. Markov).

KALITOVSKIY, Ye.F.; SHAROVAROVA, V.G.

Treatment of diseases of the joints with Minsk mineral (chloride-sodium) water alone as well as combined with other therapeutic factors. Vop. kur. fizioter. i lech. fiz. kul't. 28 no.5:434-436 S-O '63. (MIRA 17:9)

1. Iz Belorusskogo instituta nevrologii, neyrokhirurgii i fizioterapii (dir.- kand. med. nauk Ye.F. Kalitovskiy).

KALITSEV, G.G.

OTARAYEV, I.B.; TER-GEVORKYAN, A.A.; SARAN, A.N.; KALITSEV, G.G.; YESIYEVA, D.M.; YELOSHVILI, Sh.A.

Some peculiarities of the epidemiology and clinical picture of the outbreak of a mass food poisoning. Gig. i san. 22 no.12:70-71 D '57 (MIRA 11:3)

1. Iz kafedry infektsionnykh bolezney Severo-Osetinskogo meditsinskogo instituta i Severo-Ositinskoy respublikanskoy sanitarno-epidemiologicheskoy stantsii.

(FOOD POISONING, etiol. & pathogen.
Salmonella typhimurium in food (Rus)
(SALMONELLA INFECTIONS,
typhimurium, food pois. (Rus)

DAVYDOVA, I.S.; BIRKOVSKIY, Yu.Ye.; KALITSEVA, L.I.; KOLOTILOVA, L.V.; TURETSKAYA, E.S.

Diseases caused by S.Breslau. Zhur.mikrobiol. epid. i immun. 32 no.4:143 Ap '61. (MIRA 14:6)

1. Iz L'vovskogo Instituta epidemiologii, mikrobiologii i gigiyeny.
(SALMONELLA)

KALITSEVA, L.I.

Dynamics of the incidence of dysentery and the distribution of dysentery carriers. Zhur.mikrobiol., epid. i immun. 32 no.10: 128-132 O '61. (MIRA 14:10)

1. Iz L'vovskogo instituta epidemiologii, mikrobiologii i gigiyeny.
(LVOV—DYSENTERY)

GRISHINA, O.S.; KALITSEVA, L.I.; MAKSIMOVICH, K.A.

Importance of enteropathogenic E. coli in the etiology of acute intestinal diseases in children during the first year of life. Vop. okh. mat. i det. 7 no.3:6-9 Mr '62. (MIRA 15:5)

1. Iz L'vovskogo instituta epidemiologii, mikrobiologii i gigiyeny (dir. - kand.med.nauk S.D.Klyuzko).
(ESCHERICHIA COLI) (INFANTS--DISEASES)

KALITSEVA, L.I.; KOLOTILOVA, L.V.; LYASKOVSKAYA, M.N.

Epidemiology of typhoid fever. Zhur. mikrobiol., epid. i immun. 33 no.1:50-53 Ja '62. (MIRA 15:3)

1. Iz L'vovskogo instituta epidemiologii, mikrobiologii i gigiyeny i oblastnoy sanitarno-epidemiologicheskoy stantsii.
(TYPHOID FEVER)

KALITSEVA, L.I.

Spread of dysentery and the bacterial carrier state in children's collectives. Zhur. mikrobiol., epid. i immun. 33 no.2:125 F '62. (MIRA 15:3)

1. Iz L'vovskogo instituta epidemiologii, mikrobiologii i gigiyeny.

(DYSENTERY)

GRISHINA, O.S.; KALITSEVA, L.I.; MAKSIMOVICH, K.A.

Characteristics of enzyme and serological properties of enteropathogenic Escherichia coli isolated in enteritis in neonates and infants. Zhur. mikrobiol. epid. i immun. 33 no. 10:65-70 O'62 (MIRA 17:4)

1. Iz L'vovskogo instituta epidemiologii, mikrobiologii i gigiyeny.

GRISHINA, O.S.; KALITSEVA, L.I.; MAKSIMOVICH, K.A.; KROPOTOVA, Z.N.

Epidemiology of coli enteritis in Lvov. Zhur. mikrobiol., epid. i immun. 40 no. 8:125-130 Ag '63. (MIRA 17:9)

1. Iz L'vovskogo instituta epidemiologii, mikrobiologii i gigiyeny.

KRISHTAL'SKAYA, L.R. [Kryshtal's'ka, L.R.]; KALITSEVA, L.I.

Comparative study of three methods of the determination of staphylococcal sensitivity to antibiotics. Mikrobiol. zhur. 26 no.2:22-25 '64. (MIRA 18:8)

1. L'vovskaya oblastnaya klinicheskaya bol'nitsa i L'vovskiy institut epidemiologii i mikrobiologii.

KALITSIN, D.

Amylase activity of pancreatic homogenates of female rats exposed to prolonged medinal sleep. Nauch tr. vissh. med. inst. Sofiia 42 no.1:181-188 '63.

1. Predstavena ot prof. B. Koichev.
(AMYLASE) (PANCREAS) (SLEEP)
(BARBITURATES)

KALITSIN, D.S.

Differences in the amylase activity of the blood and pancreas of male and female albino rats subjected to prolonged medinal sleep. Izv. inst. fiziol. (Sofiia) 6:243-251 '63.

(BARBITURATES) (SLEEP) (AMYLASE)
(BLOOD CHEMICAL ANALYSIS) (PANCREAS)
(SEX)

L 24352-65 EWT(1)/EWP(m)/EPA(v)-3/EWG(v)/T-2 Po-4/Pe-5/Pq-4/Pg-4 GW

ACCESSION NR: AT5004302 B/2503/64/012/01-/0191/0204

AUTHOR: Kalitsin, N.

TITLE: A new method for solving the equations of Newton's and Einstein's celestial mechanics

SOURCE: Bulgarska akademiya na naukite. Fizicheski institut. Izvestiya na Fizicheskiya institut s AKEB, v. 12, no. 1/2, 1964, 191-204

TOPIC TAGS: celestial mechanics, celestial mechanics equations solution, many body problem, approximate equation solution

ABSTRACT: A new method for the approximate solution of the equations of celestial mechanics (Newton's and Einstein's) is presented in which the basic idea is taken from the quantum theory of the electromagnetic field. The method is based on the expansion of variable parameters characterizing the motion in series in powers of the gravitational constant f. The n-body problem in classical celestial mechanics is used to illustrate the method. According to this method, the Cartesian coordinate of the i-th point $r^i(x^i, y^i, z^i)$ $(i = 1, \ldots, n)$ of the

Card 1/2

L 24352-65

ACCESSION NR: AT5004302

system of n mass points is expanded in the power series

$$r^i(t)=r_0^i(t)+fr_1^i(t)+f^2r_2^i(t)+\cdots \qquad (1)$$

Expansion (1) is substituted into the equation of motion for $r^i(t)$, and on the basis of the obtained expression, second-order differential equations for determining $r_0^i(t)$, $r_1^i(t)$,... are derived which can be integrated by means of quadratures. The convergence of the method is verified by using the two-body problem. An analysis of the first terms of expansion (1) shows that the series is rapidly convergent. The author considers the significant feature of the method to be the fact that the approximate solution is obtained by means of elementary functions of time and certain initial conditions of motion. Another interesting fact is that no suppositions were made concerning the masses of the bodies. Orig. art. has: 52 formulas. [JA]

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: AA

NO REF SOV: 001 OTHER: 001 ATD PRESS: 3178

Card 2/2

KALITSIN, N., prof.

Scientific notes. Fiz mat spisanie BAN 7 no.3:224-225 '64.

L 05377-67

ACC NR: AT6031509 SOURCE CODE: BU/2503/66/014/000/0147/0158

AUTHOR: Kalitsin, N.; Kalinkov, M.

13
12
13+1

ORG: none

TITLE: Supergiant stars as massive condensations

SOURCE: Bulgarska akademiya na naukite. Fizicheski institut. Izvestiya na Fizicheskiya institut s ANEB, v. 14, 1966, 147-158

TOPIC TAGS: galaxy, star cluster, supergiant star, star association

ABSTRACT: The characteristics of a suggested new model of a star are determined. On the basis of the works of Iben, Chandrasekhar, and Tooper, the mass of the supergiant star should be $10^4 M_\odot$, when a pulsation instability appears. A similar mass is obtained by extrapolation of existing empiric mass-luminosity relations. The formula of Hoyle and Fowler produces a larger mass, but the average $10^{4^{+1}_{-0,5}} M_\odot$ is in conformity with theoretical examinations. Extrapolation of the empiric mass-radius relations ($M = 10^4 M_\odot$) leads to $R \approx 10^3 R_\odot \approx 7.10^{13}$ cm. The brightness of the described model of a non-stationary object varies owing to pulsation instability. It is shown that the variations in brightness may be due to expansion of the shells, if results of statistical analysis of the light curve of supergiant stars

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L 05399-67

ACC NR: AT6031509

(1 explosion/day) are applied, and if the mass flow is assumed to be 10^{30}g/explosion, at an observed velocity of flow of 5.10^8 cm/sec. On the surface, the optical depth of the shell is tau $\approx$20, and at a distance $(4 \div 5)R$ it is already tau $<$ 1. This increases the observed effective radius of the supergiant stars. A lifetime of $\sim$ 600 years has been established for these stars. A figure of approximately 50 supergiant stars in the visible universe has been obtained by extrapolation of the luminosity function of the stars and the number of galaxies (10^9) in a sphere of 2.10^9 ps radius. Despite an error in evluation, there is a coincidence with observations made of some 35 supergiant stars. The described model of such a star will most probably break up and form star associations or star clusters. The authors express gratitude to their colleague I. Nedyalkov for useful discussions and for his interest in their work. Orig. art. has: 16 formulas.

SUB CODE: 03/ SUBM DATE: 25May65/ ORIG REF: 008/ OTH REF: 055/

Card 2/2

S/035/62/000/003/002/053
A001/A101

~~26.1400~~ 26.1300
~~5.2200~~

AUTHOR: Kalitsin, N. S.

TITLE: On equations of motion of relativistic rockets

PERIODICAL: Referativnyy zhurnal, Astronomiya i Geodeziya, no. 3, 1962, 9, abstract 3A81 ("Izv. Geofiz. in-t. B"lg.AN", 1960, v.1, 91-100, Bulgarian; Russian and English summaries)

TEXT: The author divides relativistic rockets into 2 classes. Relativistic rockets of the first class move relative to the Earth with non-relativistic speeds, but they are accelerated by ejection of particles whose velocities are partly relativistic. Ionic, plasma and atomic engines, being at present in the testing stage, belong to this class. Relativistic rockets of the second class move, relative to the Earth, with relativistic speeds. Motion equations for first-class relativistic rockets are derived in the present paper.

V. Brumberg

[Abstracter's note: Complete translation]

Card 1/1

31429
B/502/60/008/000/003/003
D246/D304

26.1430

AUTHOR: Kalitsin, Nikola St.

TITLE: Photon excited radiation in an infinitely long channel in a medium

SOURCE: Bulgarska akademiya na naukite. Fizicheski institut. Izvestiya na fizicheskiya institut s ANEB, v. 8, 1960, 207-216

TEXT: D. Hondros (Ref. 2: Ann. d. Phys., 30, 1909, 905) investigated the above problem, but not for the practically important case $k = \lambda$. This is taken up by the author of the present paper. He assumes a homogeneous and isotropic medium with an infinitely long channel of circular cross-section in it (radius : ρ). Along the axis of the channel moves a monochromatic electromagnetic wave. A radiation, excited by this wave, is analogous to the Cherenkov radiation. The author, using classical methods, attempts to find the characteristics of such radiation. Assuming that the Hertz

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Photon excited radiation ...

vector $\vec{P} = e^{-i\omega t}\vec{Q}$, the Maxwell equations can be written in a compact form:

$$\text{grav div } \vec{Q} - \text{rot rot } \vec{Q} + k^2 \vec{Q} = 0 \qquad (4)$$

where

$$k^2 = \frac{\varepsilon\omega^2}{c^2} \qquad (5)$$

Eq. (4) can be expanded into 3 equations in cylindrical coordinates and solved with the aid of cylindrical functions ($k \neq \lambda$, as in Ref. 2: Op.cit.). However, in these solutions there is a term $\sqrt{k^2-\lambda^2}$ in the denominations. For the case $k_2 = \lambda$, this is meaningless. (Subscript 2: region 2: $0 \leqslant r \leqslant \rho$: region of the channel). The author then tries solutions in the region $r \leqslant \rho$ of the following form:

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Photon excited radiation ...

$$Z' = A_n r^n$$

$$R' = B_n r^{n+1} - D_n r^{n-1}$$

$$\Phi' = B_n r^{n+1} + D_n r^{n-1} \qquad (12)$$

In this way he finds the components of E and H. For the radiation, far away from the channel (region 1), the general cylindrical function, used here, has the form $pH_{1,n} + qH_{2,n}$ where $H_{1,n}$ and $H_{2,n}$ are Hanckel functions. Assuming the electrical conductivity of the medium to be negligently small, one can take the real part of the Hanckel function. Hence the electromagnetic field can be represented by the function

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$$e^{i\lambda z - i\omega t} \pm i\sqrt{k_1^2 - \lambda^2}\, r \mp i\,\frac{2n+1}{4}\pi$$

where $\lambda = k_2$ - real; substituting these into the expressions for E and H and using Pointing's theorem to find the energy density of the radiation $\bar{F}$, the author obtains results similar to those of Hondros. He simplifies it, by using more realistic assumptions, to the following:

$$F = \frac{e^{-2\beta z}}{4\pi}\,\frac{c^2}{\omega}\, s\left[|k_1^2|^2(|E_1|^2 - |E_2|^2) + K|\lambda|^2|\Delta_1|^2\right] \qquad (19)$$

The coefficients δ_n, Δ_1, E_1, E_2 depend on the boundary conditions. These conditions: a) radiation should not disappear away from the

Photon excited radiation ...

channel, b) continuity of the tangential components along the cylindrical surface of the channel. He investigates the two cases [s = 2 and s = 1] separately and finds that for real x it is impossible to satisfy the boundary conditions. Hence $\overline{F} = 0$. He tries other possible solutions for Q_z, Q_r, Q_φ (also treated by Hondros) and these all result in contradictions. The general conclusion is that in the classical approximation, there is no radiation, analogous to the Cherenkov radiation of the electron. This is in agreement with experiments by Cherenkov and others. There are 3 references: 2 Soviet-bloc and 1 non-Soviet-bloc.

Card 5/5

KALITSIN, N. S., Cand. Phys-Math. Sci. (diss) "Some Investigations on the Movement of Satellites of Rockets and Some Astronomical Objects." Moscow, 1961, 21 pp. (Moscow State Univ*) 150 copies (KL Supp 12-61, 251).

* and Physics Faculty of Physics Institute of Bulgarian Acad. of Sci.

S/124/62/000/010/007/015
D234/D308

FY1 (27... 4/21...
8961

AUTHOR: Kalitsin, Nikola, St.

TITLE: Theory of multistage rockets with intermediate explosions

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 10, 1962, 33, abstract 10B193 (Izv. Geofiz. in-t B'lg. AN. 1961, 2, 235-248 (Bulg.; summaries in Rus., Eng.))

TEXT: In order to increase the final velocity of a multistage rocket, the author proposes that the rejected stages should be separated by means of an explosive device. The relative velocity of stages separating from each other is increased in this way. According to the author's calculations, this method makes it possible to decrease the initial weight of a two-stage rocket with final velocity 9 km/sec by 12%, and that of a four-stage rocket with the same final velocity by 25%. [Abstracter's note: Complete translation.]

√B

Card 1/1

S/035/62/000/003/023/053
A001/A101

AUTHOR: Kalitsin, N. S.

TITLE: Expanding system of galaxies and a new application of Einstein's general theory of relativity

PERIODICAL: Referativnyy zhurnal, Astronomiya i Geodeziya, no. 3, 1962, 79, abstract 3A584 ("Izv. Fiz. in-t s ANEB", 1961, v. 9, no. 1, 153-173, Bulgarian; Russian and English summaries)

TEXT: The author makes use of the spherical symmetric non-static solution of gravitation equations for studying the motion of galaxies. The hierarchical structure of the systems of galaxies is assumed, and each of the galaxies gives rise to a local disturbance of geometrical properties of space which is plane as a whole. The formulae are derived for the velocity of expansion and Hubble constant; the latter, based on the data of the Virgo cluster of galaxies, turned out to be 50.5 km/sec per 1 Mpc. Observational data are adduced for experimental substantiation of the theory developed. There are 9 references.

Ya. Pugachev

[Abstracter's note: Complete translation]

Card 1/1

S/058/62/000/005/013/119
A001/A101

94 4607

AUTHOR: Kalitsin, N. St.

TITLE: A set of rigorous solutions of Einstein gravitational equations in vacuum and Riemann equations $R_{klm} = 0$

PERIODICAL: Referativnyy zhurnal, Fizika, no. 5, 1962, 28, abstract 5A267 ("Izv. Fiz. in-t s ANEB", 1961, v. 9, no. 1, 143-151, Bulgarian; Russian and English summaries)

TEXT: The author has found the rigorous solution for the homogeneous system of Einstein equations $R_{ik} = C$ for the following metrical quadratic form:

$$ds^2 = e^{\lambda} dr^2 - e^{\mu}(d\gamma^2 + sh^2\chi d\theta^2 + sh^2\chi \sin^2\theta d\varphi^2),$$

where λ and μ depend only on r (static case). The solution, which looks as follows: $\mu^2 = \lambda^2$ reduces to zero also the Riemann-Christoffel curvature tensor. However, the pseudo-tensor of momentum-energy turns out to be different from zero.

Ya. Pugachev

[Abstracter's note: Complete translation]

Card 1/1

S/058/62/000/005/014/119
A001/A101

AUTHOR: Kalitsin, N. St.

TITLE: Expanding system of galaxies and a new application of Einstein's general theory of relativity

PERIODICAL: Referativnyy zhurnal, Fizika, no. 5, 1962, 29, abstract 5A276 ("Izv. Fiz. in-t s ANEB", 1961, v. 9, no. 1, 153-173, Bulgarian; Russian and English summaries)

TEXT: The spherically-symmetric non-static solution of gravitational equations is used for investigating the motion of galaxies. Hierarchical structure of galactic systems is assumed; each of the galaxies gives rise, by definition to a local perturbation of geometrical properties of space which is flat as a whole. Formulae are derived for expansion speed and Hubble constant; the latter turns out to equal to 50.5 km/sec per 1 Mps. Observational data are adduced for experimental substantiation of the theory developed.

Ya. Pugachev

[Abstracter's note: Complete translation]

Card 1/1

42257

B/503/61/009/001/006/007
B125/B102

13.2520

AUTHOR: Kalitsin, N. St.

TITLE: An approximate theory of the axisymmetric gyro with variable mass

SOURCE: Bulgarska akademiya na naukite. Fizicheski institut. Izvestiya na Fizicheskiya institut s ANEB v. 9, no. 1. 1961. 175-183

TEXT: The approximate formula $I(\vec{\omega}_2 \times \omega_1) = \vec{M}$ (1) for an axisymmetric gyro with constant mass is here generalized, for the first time, to a gyro with variable mass. I is the moment of inertia of the gyro, ω_1 is the constant angular velocity vector with reference to the OO_1 axis of rotation, $\vec{\omega}_2$ is the angular velocity of the OO_1 axis, $\vec{M}$ is the torque of the external forces with respect to a stationary point on the axis of rotation. ω_1 is assumed to be much greater than ω_2. Generalizing the formula (1) to a gyro with variable mass and nonrelativistic velocities of the departing particles (ordinary rockets which rotate around their longitudinal axis) one obtains

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An approximate theory of the...

$$I(\vec{\omega}_2 \times \vec{\omega}_1) = \mathbf{N} - (\mathbf{N}\mathbf{e}_1)\mathbf{e}_1 = \mathbf{e}_1 \times (\mathbf{N} \times \mathbf{e}_1). \qquad (14)$$

with $\vec{N} = \vec{M} + \sum \vec{r}_i \times \dot{m}_i \vec{u}_i$ and $\vec{N}\vec{e}_1 = I\dot{\omega}_1 + I\omega_1$. In these expressions m_i ($i = 1,\ldots,n$) is the mass of the material point P_i with the radius vector r_i and u_i are the absolute velocities of the points P_i with the masses dm_i. Further generalization to relativistic velocities of the particles ejected from the gyro (future atomic, photon, and other rockets, rapidly revolving young stars with a flow of relativistic particles ejected from them) also leads to $I(\vec{\omega}_2 \times \vec{\omega}_1) = \vec{N} - (\vec{N}\vec{e})\,\vec{e}_1$ with

$$\mathbf{N} = \mathbf{M} + \sum_{i=1}^{n} \mathbf{r}_i \times \dot{m}_i' \frac{1}{\sqrt{1-(u_i^2/c^2)}} \mathbf{u}_i, \qquad (26),$$

$$\mathbf{M} = \frac{d}{dt}\sum_{i=1}^{n} \mathbf{r}_i \times m_i \mathbf{v}_i - \sum_{i=1}^{n} \mathbf{r}_i \times \dot{m}_i' \frac{1}{\sqrt{1-(u_i^2/c^2)}} \mathbf{u}_i. \qquad (25),$$

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An approximate theory of the...

$$M_i + M_i' = \frac{d}{dt}(\mathbf{r}_i \times m_i \mathbf{v}_i) - \mathbf{r}_i \times \dot{m}_i' \frac{1}{\sqrt{1-(u_i^2/c^2)}} \mathbf{u}_i \quad (24).$$

M_i and M_i' are the torques of the external and internal forces, $\vec{F}_i$ and $\vec{F}_i'$, acting at the point mass P_i. $\vec{F}_i$ and $\vec{F}_i'$ are in equilibrium.

ASSOCIATION: Fizicheski institut s ANEB pri BAN (Physics Institute of the ANEB at the BAN)

SUBMITTED: October 4, 1960

Card 3/3

KALITSIN, Nikola St., prof.

Scientific research with artificial satellites. Fiz mat spisanie BAN 5 no.2:104-113 '62.

1. Chlen na Redaktsionnata kolegiia. "Fiziko-matematichesko spisanie".

KALITSIN, N., prof.

A conference on the theory of relativity and gravitation, held at Jablonna near Warsaw in June 1962. Fiz mat spisanie BAN 5 no.4:310-312 '62.

1. Chlen na Redaktsionnata Kolegiia, "Fiziko-matematichesko Spisanie".

KALITSIN, Nikola, prof.

The 13th Congress of the International Astronautical Federation at Varna. Fiz mat spisanie BAN 5 no.4:243-256 '62.

1. Chlen na Redaktsionnata kolegiia, "Fiziko-matematichesko spisanie."

KALITSIN, N.

Rotation and forms of celestial bodies. Izv fiz atom BAN 9 no.2:169-190 '62.

L 18859-63 EPA(b)/EWT(d)/EWT(l)/FCC(w)/FS(v)-2/BDS/ES(v) AFFTC/
ASD/AFMDC/ESD-3/APGC/IJP(C)/SSD Pd-4/Pe-4/Pg-4/Po-4/Pq-4 GW
B/2503/62/010/002/0071/0080

ACCESSION NR: AT3002413

AUTHOR: Kalitsin, N.

TITLE: Some laws of similarity in astronomy, astronautics, astrophysics and cosmogony

SOURCE: B"lgarska akademiya na naukite. Fizicheski institut. Izvestiya na Fizicheskiya institut s ANEB, v. 10, no. 2, 1962, 71-80

TOPIC TAGS: similarity, similarity law, similtude, model test, artificial satellite, gravitation, electromagnetism, relativity, dynamic similarity, astronomy, astronautics, astrophysics, cosmogony

ABSTRACT: In conformity with a suggestion of the author of this article and of I. Nedyalkov, artificial satellites of the Earth and particularly satellites of the Sun may be used as laboratories for carrying out model experiments for solving certain complex problems of astronomy, astronautics, astrophysics and cosmogony. The problem of the motion of n bodies according to Newton's theory of gravitation (n 3), or the problem of the motion of n rotating bodies according to Einstein's

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theory of gravitation,[21] which up to now have not found their practical mathematical solution, may be experimentally studied by means of suitable models of n bodies moving in accordance with the law of similarity in the state of weightless in artificial satellites. By means of model experiments with artificial satellites, studies may be made of a number of problems of astrophysics, such as the problem of the internal structure of stars, explosions on the surface of stars, etc. In these experiments it is necessary to assure not only a similarity to the forces of gravitation but also a similarity to the electromagnetic and nuclear forces. By means of models in the state of weightlessness in satellites some cosmological problems, such as that of the formation of the Solar System, etc. may also be examined. Let

$$\frac{l}{l'}=a;\quad \frac{t}{t'}=\tau;\quad \frac{m}{m'}=\mu;\quad \frac{f}{f'}=\varphi \qquad (1)$$

denote the ratios of the corresponding distances, times, masses and gravitation constants in the systems S and M. From the differential equations of the motion

of n bodies in Newton's mechanics we obtain the condition for similarity

$$\frac{a^2}{\tau^2 \varphi \mu} = 1. \qquad (2)$$

Condition (2) may be written as follows

$$\frac{v^2 l}{f m} = \frac{v'^2 l'}{f' m'} = K = \text{idem}, \qquad (3)$$

v — velocity

K = idem represents, therefore, the necessary condition for the dynamic similarity of the systems S and M, i.e. for the system of n bodies in Newton's theory of gravitation. In the special theory of relativity space and time are intrinsically connected with each other. This permits the examination of space in the theory of relativity as four-dimensional. Consequently, in the theory of relativity similarity if possible only if

$$\frac{l}{l'} = \frac{t}{t'}, \text{ i. e. } a = \tau. \qquad (4)$$

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ACCESSION NR: AT3002413

It follows from (4) that v = v', c = c', c is the velocity of light in S and c' in M. In the general theory of relativity in which the linear element is given by the expression - $ds^2 = g_{ik}dx_i dx_k$, i, k = 0, 1, 2, 3; $x_o = ct$, it is summed up by identical indexes, t - time, c - universal constant, similarities may be realized through the relations ds = ads', t = at' in any point of the space x_i,

$$m = \mu m', \quad f = \varphi f', \quad c = c'. \tag{5}$$

From ds = ads', t = at' in any point of space x_i there follows

$$dl = a\,dl', \tag{6}$$

where dl is the spatial distance in the theory of relativity of two neighboring points

$$dl^2 = \left(g_{\alpha\beta} - \frac{g_{0\alpha}\,g_{0\beta}}{g_{00}}\right) dx_\alpha\,dx_\beta, \quad \alpha, \beta = 1, 2, 3.$$

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ACCESSION NR: AT3002413

Einstein's equations of gravitation give us the condition for similarity

$$\frac{\alpha}{\mu\varepsilon} = 1, \qquad (7)$$

which may be written in the non-dimensional way

$$\frac{c^2\,dl}{f\,m} = \frac{c^2\,dl'}{f'\,m'} = K = \text{idem.} \qquad (8)$$

Analogically from the equations of Maxwell and Lorenz of the electromotive force conditions for similarity in the presence of a gravitation and electromagnetic field are obtained. As a special case we obtain the following interesting theorem: the gravitation and electromagnetic phenomena remain similar if we change all distances, masses and electrical charges by one and the same factor. The velocities of the corresponding bodies in this similarity are retained.

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L 18859-63
ACCESSION NR: AT3002413

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 04 Jun 63 ENCL: 00

SUB CODE: PH NO REF SOV: 001 OTHER: 000

6/6
Card

KALITSIN, Nikola, prof, inzh.

Triumph of Soviet science. Nauka i tekh mladezh 14 no.11:9 '62.

KALITSIN, Nikola St. (Bolgariya)

Cosmic rays and some astrophysical phenomena. Astron.zhur. 39 no.4:760-761 Jl-Ag '62. (MIRA 15:7)
(Cosmic rays)

KALITSIN, Nikola St.

Fourteenth Congress on Aeronautics in Paris. Fiz mat spisanie BAN 6 no. 4:301-314 '63.

KALITSIN, N.St., prof. inzh.

Orientation of spaceships. Nauka i tekh mladezh 15 no.10:
5-6 O'63.

KALITSIN, N.St.

Existence of a nonsingular stationary solution of the Eddington gravitational equations, which is capable of representing a material body. Izv fiz atom BAN 11 no.1/2:145-165 '63.

On a new cosmogonic theory. 167-177

KALITSIN, Nikola St., prof.

Deceleration of time in space flights. Priroda Bulg 12 no. 5: 27-29 S-O '63.

KALITSIN, Nikola St., prof.

Radiation belts around the earth. Fiz mat spisanie BAN 6 no. 3:175-180 '63.

1. Member of the Board of Editors, "Fiziko-Matematicheako spisanie".

KALITSIN, Nikola St., prof., doktor na fiziko-matematicheskite nauki

Fifteenth Congress of the International Federation of Astronautics in Warsaw. Aviats kosmonavt 6 no. 7:2 '64.

KALITSIN, Nikola St., d-r na fiziko-matematicheskite nauki

Some new trends in the theory of elementary particles.
Priroda Bulg 13 no.6:73-74 N-D '64.

L 34734-66 EWT(1) IJP(c) GW

ACC NR: AP6025119 SOURCE CODE: BU/0012/65/008/001/0008/0027

36
B

AUTHOR: Kalitsin, Nikola; Kalinkov, Marin

ORG: none

TITLE: Astronomical effects of the general theory of relativity

SOURCE: Fiziko-matematicheska spisanie, v. 8, no. 1, 1965, 8-27

TOPIC TAGS: general relativity theory, celestial mechanics, gravitation red shift, Mercury planet

ABSTRACT: This is a comprehensive survey of the present status of the astronomical effects which serve as confirmation of the general theory of relativity. Starting with the classic arguments concerning the motion of the perigee of the planet Mercury and other celestial bodies and the light deflection near celestial bodies, it proceeds to the gravitational red shift and the most recently investigated effects of the theory (Eotvos-Dicke inertial-heavy mass equivalence measurements, Lense-Turing-Schiff effect, stellar period increase on very eccentric orbits, Hvolson effect, negative mass hypothesis). Orig. art. has: 6 figures. [JPRS: 32,859]

SUB CODE: 20, 03 / SUBM DATE: none

LS

Card 1/1

ACC NR: AM6036237 Monograph

Kalitsin, Nikola St. (Professor; Doctor of Physical and Mathematical Sciences)

Dynamics of relativistic rockets and some celestial objects (Dynamik der relativistischen Raketen und einiger astronomischen Objekte) v. 1. Sofia, Verlag der BAW, 1963. 234 p. illus., biblio.. (At head of title: Bulgarische Akademie der Wissenschaften. Physikalisches Institut mit experimenteller Atom orschungsstelle) Added t.p. in Bulgarian. 700 copies printed.

TOPIC TAGS: rocket, relativistic quantum mechanics, celestial mechanics, general relativity theory

PURPOSE AND COVERAGE: This book is intended for readers familiar with the fundamentals of the theory of relativity and interested in the dynamics of relativistic rockets. The assumption is made that the readers have also read the following books: A Mathematical Treatment of the Theory of Relativity (Relativitatstheorie in mathematischer Behandlung), by A. Eddington; Field Theory (Theorie des Feldes), by E. Landau and E. Lifschitz; and Theory of Space, Time, and Gravity (Theorie des Raumes, Zeit und der Schwere), by V. Fock. The book deals mainly with the author's personal investigations in the dynamics of

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ACC NR: AM6036237

of rockets accelerated by the use of relativistic particles and which also can possess relativistic velocities relative to the Earth. The fundamental equations of the general theory of elasticity are criticized and Eddington's gravitational equations are contrary to Einstein, considered to characterize the gravitational field and matter without singularities.

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ACC NR: AM6036237

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ACC NR: AM603 6237

Appendix III. On a new method of solving the equations of the Newtonian and Einstein celestial mechanics -- 227

SUB CODE: 20/ SUBM DATE: 20Oct63/ SOV REF: 030/ OTH REF: 054

Card 4/4

Kalitsun V.I.

24-58-3-34/38

AUTHOR: Kalitsun, V.I. (Moscow)

TITLE: On a Previous Article by A. D. Al'tshul', "Basic Laws of Uniform Flow of Water in Channels" (Ref.1) (Po povodu stat'i A. D. Al'tshulya "Osnovnyye zakonomernosti ravnomernogo techeniya vody v kanalakh"(1)).

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 3, pp 171-172 (USSR)

ABSTRACT: Al'tshul' has given an equation for the Chezy coefficient for channel flow (Refs.1, 2):

$$C = 20 \lg \frac{R}{E + \frac{0.004}{\sqrt{Ri}}} \left[\frac{M^{1/2}}{sec}\right] \qquad (1)$$

where R = hydraulic radius, mm, E = height of roughness, mm, i = slope of channel. A feature of this equation is that it covers all regions of flow in the channel, i.e., smooth and wholly rough friction surfaces and the transition region between them. The coefficient C depends not only upon the hydraulic radius and the roughness but also on the slope of

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On a Previous Article by A. D. Al'tshul', "Basic Laws of Uniform Flow of Water in Channels" (Ref.1).

the channel bed; this point has been doubted by some previous authors. Al'tshul''s experimental data agrees with the equation for hydraulically smooth and wholly rough channels, but no data has been given for the transition region. Recent Italian work by Marchi (Ref.3) has dealt with this point with tests on cement slab channels of trapezoidal and triangular section with varying angle. Eq.(1) may be rewritten:

$$C = -20 \lg \left(\frac{E}{R} + \frac{0.004}{R\sqrt{Ri}} \right) \qquad (2)$$

and curves of $C = f(\chi)$, where $\chi = \lg \left[R\sqrt{Ri} \right]$, (3)

are drawn. The curves are drawn for both triangular and trapezoidal channels with different values of E and show good agreement between Marchi's results and Eq.(1) for the transition region. (Condensed translation). There are 2 graphs, 2 Soviet and 1 Italian references.

SUBMITTED: January 28, 1957.

Card 2/2

1. Water--Flow--Theoretical analysis

AL'TSHUL', A.D., kand. tekhn. nauk; KALITSUN, V.I., inzh.

Hydraulic resistance of welded joints with packing rings.
Stroi. truboprov. 3 no.8:4-7 Ag '58. (MIRA 11:11)
(Pipelines--Welding)